

Set	Items	Description
S1	38490	S OSTE? OR OSSO? OR OSTO? OR OSSE? OR ENDOSTE? OR PERIOSTE?
S2	117721	S BONE? ? OR ORTHOPED? OR ORTHOPAED? OR OSSEOUS? OR SKELET?
S3	9002	S OSTEAL OR OSTEOID OR OSSEO? OR OSTEOLOG? OR PERIOSTE??? OR OSSIF? OR FEMUR?
S4	6214	S TIBIA? OR MUSCULOSKELET? OR HUMER? OR FIBULA?
S5	1383559	S ADHESIV? OR BOND? OR CEMENT? OR HARDEN?()COMPOSITION?
S6	220417	S MUCILAG? OR GLUE? OR GLUING OR PASTE?
S7	419281	S EPOX? OR CENTIPOIS? OR ELASTIC()MODULUS? OR CYANOACRYL?
S8	25916	S S1:S4 AND S5:S7
S9	441	S NEEDLE? OR CONDUIT? OR STYLET? OR STYLUS? OR TROCAR? OR PUNCTURER? OR PUNCTURING?
S10	1892	S INJECTOR? OR INJECTING? OR INJECTION? OR INJECTER? OR SPIKE? OR LANCE? ? OR LANCET?
S11	447	S LANCING? OR SHARP? OR DELIVERER? OR INTRODUCER? OR (DELIV? OR INTRODUC? OR INJECT?) () (DEVICE? OR TOOL? OR APPARATUS?)
S12	4463	S HOLDER? OR HARDWARE? OR DEVICE? OR APPARATUS? OR WORKPIECE? OR VISE? OR CLAMP?
S13	2542	S JAW OR JAWS OR CLAMP? OR WORKHOLDER? OR GRIP? ? OR SUPPORT? ? OR BRACKET?
S14	416	S BRACE? OR STABILIZER? OR STABILISER? OR GRIPPER?
S15	356	S VIBRAT? OR OSCILLAT? OR SHIMMY? OR SHIMMIE? OR WOBBL? OR TREMBL? OR TREMOR?
S16	190	S SHAKE? OR SHAKING? OR QUIVER?
S17	6293	S (S1:S16) (10N) (METHOD? OR TECHNIQ? OR PROCESS?? OR PROCEDUR? OR MANNER? OR MODE? OR SYSTEM?)
S18	30	S AU=(YETKINLER D? OR YETKINLER, D? OR DELANEY D? OR DELANEY, D? OR CONSTANTZ B? OR CONSTANTZ, B?)
S19	0	S YETKINLER(2N) DURAN OR DELANEY(2N) (DAVID OR DAVE) OR CONSTANTZ(2N) BRENT
S20	1255	S IC=(A61B?)
S21	0	S MC=(P31?)
S22	30	S S18:S19
S23	30	IDPAT (sorted in duplicate/non-duplicate order)
S24	30	IDPAT (primary/non-duplicate records only)
S25	25886	S S8 NOT S22
S26	536	S S25 AND S15:S16
S27	214	S S26 AND (S17 OR S20:S21)
S28	536	S S26:S27
S29	239	S S28 AND S9:S14
S30	47	S S29 AND S9:S11 AND S12:S14
S31	64	S S29 AND S9:S14(10N) S5:S7
S32	83	S S29 AND S1:S4(10N) S5:S7
S33	39	S S31 AND S32
S34	2	S S31:S32 AND S15:S16(10N) S9:S11
S35	8	S S12:S14(10N) S9:S11 AND S9:S11(10N) (S5:S7 AND S15:S16)
S36	83	S S30 OR S33:S35
S37	47	S S36 AND AC=US/PR
S38	46	S S37 AND AY=(1970:2004)/PR
S39	37	S S37 NOT AY=(2005:2007)/PR
S40	36	S S36 NOT S37
S41	30	S S40 AND AY=1970:2004
S42	28	S S40 NOT AY=2005:2007
S43	80	S S38:S39 OR S41:S42
S44	80	IDPAT (sorted in duplicate/non-duplicate order)
S45	79	IDPAT (primary/non-duplicate records only)

; show files

[File 347] JAPIO Dec 1976-2006/Oct(Updated 070201)

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[File 350] Derwent WPIX 1963-2006/UD=200714

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*\*File 350: DWPI has been enhanced to extend content and functionality of the database. For more info, visit <http://www.dialog.com/dwpi/>.*

45/7/72 (Item 72 from file: 350)

Derwent WPIX

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0005187847 *Drawing available*

WPI Acc no: 1990-178676/199023

XRPX Acc No: N1990-138897

**Method for working bone cement in spongy bone - uses mechanical vibrator comprising rotary drill and steel pin with radial projection engaging inner surface of tube placed in cement**

Patent Assignee: NILSSON M (NILS-I)

Inventor: NILSSON M

Patent Family ( 4 patents, 30 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1990004953	A	19900517	WO 1989SE648	A	19891110	199023	B
SE 198804078	A	19900512	SE 19884078	A	19881111	199027	E
SE 462417	B	19900625	SE 19884078	A	19881111	199028	E
AU 198945128	A	19900528				199035	E

Priority Applications (no., kind, date): SE 19884078 A 19881111

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
WO 1990004953	A	EN			
National Designated States,Original	AT AU BB BG BR CH DE DK FI GB HU JP KP KR LK LU MC MG MW NL NO RO SD SE SU US				
Regional Designated States,Original	BE FR IT OA SN				
SE 198804078	A	SV			
SE 462417	B	SV			

#### Alerting Abstract WO A

A **method** for working **bone cement** (11) into a cavity (9), in a **bone** (10), for fixing a prosthesis, **vibrates** it mechanically. A rotary motion produced by a dentist's drill, for example, is transmitted to a steel pin (4), which has a radial projection which engages the inner surface of a tube (8) placed in **cement**.

A pressure loading means (6) surrounds the tube to transmit an even downward force over the **cement** surface.

USE/ADVANTAGE - Rapid and proper penetration of the **bone cement** into spongy **bone** for effective prosthesis immobilisation is achieved. @(7pp Dwg.No.1/1)@

**Title Terms** /Index Terms/Additional Words: METHOD; WORK; **BONE**; **CEMENT**; SPONGE; MECHANICAL; **VIBRATION**; COMPRISE; ROTATING; DRILL; STEEL; PIN; RADIAL; PROJECT; ENGAGE; INNER; SURFACE; TUBE; PLACE

**Class Codes**

Designated States: (National Original) AT AU BB BG BR CH DE DK FI GB HU JP KP KR LK LU MC MG MW  
NL NO RO SD SE SU US

(Regional Original) BE FR IT OA SN

Original IPC: A61F-2/28 A61L-25/00

Current IPC: A61F-2/28 A61L-25/00

Original Abstract: In a method for working bone cement (11) placed in a cavity (9) of a bone (10), for instance in the medullary canal of the femur, for fixing a prosthesis in the cavity, the bone cement (11) placed in the cavity (9) is vibrated mechanically. A device for carrying out this method has a vibrating means (8) which is adapted to vibrate the bone cement (11) placed in the cavity (9).



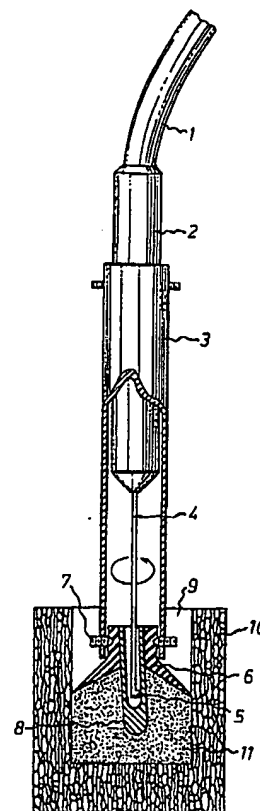
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>5</sup> : <b>A61F 2/28, A61L 25/00</b>	<b>A1</b>	(11) International Publication Number: <b>WO 90/04953</b> (43) International Publication Date: 17 May 1990 (17.05.90)
(21) International Application Number: PCT/SE89/00648 (22) International Filing Date: 10 November 1989 (10.11.89) (30) Priority data: 8804078-7 11 November 1988 (11.11.88) SE (71)(72) Applicant and Inventor: NILSSON, Magnus [SE/SE]; Allmogevägen 118, S-352 53 Växjö (SE). (74) Agent: AWAPATENT AB; Box 5117, S-200 71 Malmö (SE). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI pa- tent), BR, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (Eu- ropean patent), DK, FI, FR (European patent), GA (OA- PI patent), GB, GB (European patent), HU, IT (Euro- pean patent), JP, KP, KR, LK, LU, LU (European pa- tent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent),		NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.  <b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>

(54) Title: METHOD AND APPARATUS FOR WORKING BONE CEMENT FOR FIXING A PROSTHESIS IN A BONE

## (57) Abstract

In a method for working bone cement (11) placed in a cavity (9) of a bone (10), for instance in the medullary canal of the femur, for fixing a prosthesis in the cavity, the bone cement (11) placed in the cavity (9) is vibrated mechanically. A device for carrying out this method has a vibrat-  
ing means (8) which is adapted to vibrate the bone cement (11) placed in the cavity (9).

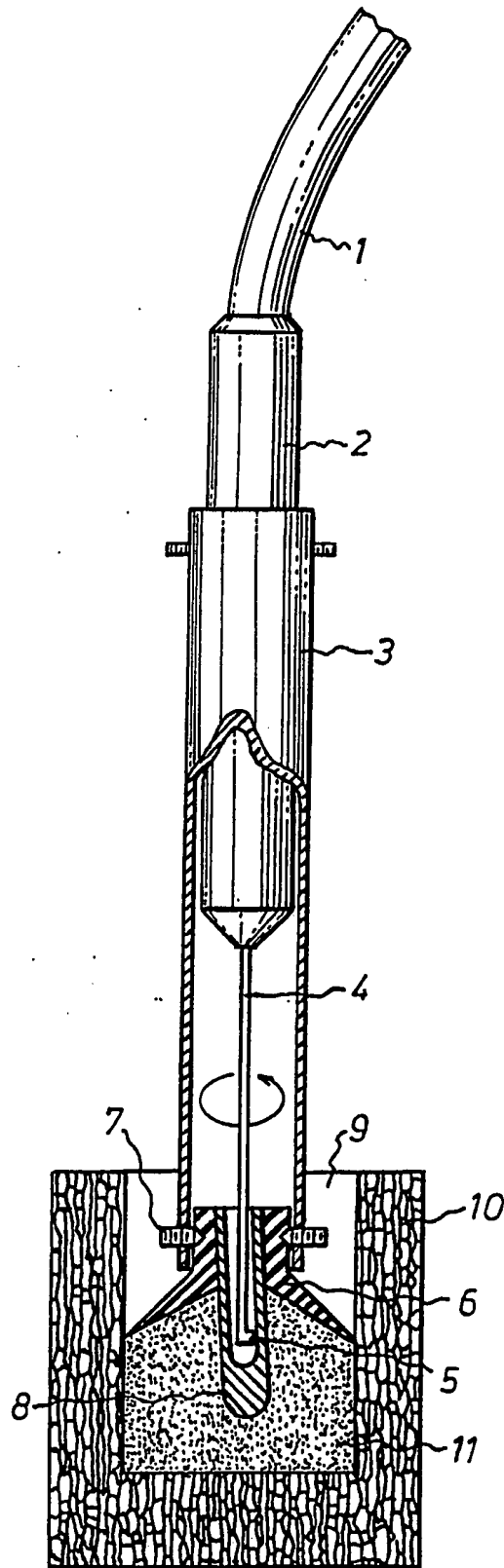


## CLAIMS

1. A method for working bone cement (11) placed in a  
5 cavity (9) of a bone (10), for instance in the medullary  
canal of the femur, for fixing a prosthesis in said cavi-  
ty, c h a r a c t e r i s e d in that the bone cement  
(11) placed in said cavity (9) is vibrated mechanically.
2. Method as claimed in claim 1, c h a r a c t e r -  
10 i s e d in that the bone cement (11) placed in said cavi-  
ty (9) is subjected to a slight pressure while being vi-  
brated.
3. A device for working bone cement (11) placed in a  
cavity (9) of a bone (11), for instance in the medullary  
15 canal of the femur, for fixing a prosthesis in said cavi-  
ty, c h a r a c t e r i s e d by vibrating means (8)  
adapted to vibrate the bone cement (11) placed in said ca-  
vity (9).
4. Device as claimed in claim 3, c h a r a c t e r -  
20 i s e d in that the vibrating means (8) is adapted to exe-  
cute a rotary movement.
5. Device as claimed in claim 3 or 4, c h a r a c -  
t e r i s e d by pressure loading means (6) having a  
cross-sectional shape corresponding to that of the cavi-  
25 ty (9), and adapted to be introduced in the cavity to be  
pressed against the bone cement (11) placed therein.

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45/7/10 (Item 10 from file: 350) [Links](#)

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0015640009 *Drawing available*

WPI Acc no: 2006-204187/200621

XRPX Acc No: N2006-175763

**Surgical instrument for improving cementing of orthopedic implants, includes vibration unit which applies controlled vibration to orthopedic implant during positioning of implant in cement receiving cavity formed to bone**

Patent Assignee: UNIV DUNDEE (UYDU-N)

Inventor: DREW T

LATE DATE,  
BUT SEE  
CITED

REFS FROM  
SEARCH  
REPORT

Patent Family ( 1 patents, 109 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2006024840	A1	20060309	WO 2005GB3354	A	20050831	200621	B

Priority Applications (no., kind, date): GB 200419338 A 20040901

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
WO 2006024840	A1	EN	28	18	
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW				
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU LV MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW				

**Alerting Abstract WO A1**

NOVELTY - The instrument (31) includes a **vibration** unit which applies controlled **vibration** to the **orthopedic** implant (21) during positioning of the implant in a **cement** receiving cavity formed to a **bone**, to increase the penetration of the **cement** into the **bone**.

DESCRIPTION - An INDEPENDENT CLAIM is also included for an **orthopedic** implant **cementing** improvement **method**.

USE - For improving **cementing** of **orthopedic** implants.

DESCRIPTION OF DRAWINGS - The figure shows the isometric view of the surgical instrument, during its use.

21 **Orthopedic** implant

31 Surgical instrument

**Title Terms** /Index Terms/Additional Words: SURGICAL; INSTRUMENT; IMPROVE; **CEMENTED**;



**ORTHOPAEDIC; IMPLANT; VIBRATION; UNIT; APPLY; CONTROL; POSITION; CEMENT; RECEIVE;  
CAVITY; FORMING; BONE**

**Class Codes**

**International Patent Classification**

<b>IPC</b>	<b>Class Level</b>	<b>Scope</b>	<b>Position</b>	<b>Status</b>	<b>Version Date</b>
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# INTERNATIONAL SEARCH REPORT

Application No

PCT/GB2005/003354

## A. CLASSIFICATION OF SUBJECT MATTER

A61F2/46

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 277 448 A (PAUL ALBERT * THODIYIL) 2 November 1994 (1994-11-02) page 6, line 2 - line 30 page 7, line 6 - line 19 claim 1	1-4, 10-13
X	WO 02/074195 A (CAMBRIDGE POLYMER GROUP INC; SPIEGELBERG, STEPHEN, H; RUBERTI, JEFFREY) 26 September 2002 (2002-09-26) page 12, line 18 - page 13, line 2 page 16, line 21 - page 17, line 4 page 18, line 23 - page 19, line 12 page 25, line 17 - line 29 figures 7-17	1-3, 5, 7, 8, 11-14, 16, 17
A	WO 90/04953 A (NILSSON, MAGNUS) 17 May 1990 (1990-05-17) page 4, line 22 - page 5, line 33 figure 1	

ATTACHED

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

18 November 2005

Date of mailing of the international search report

01/12/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Storer, J

Lee et al.

[11] Patent Number: 4,488,549

[45] **Date of Patent:** Dec. 18, 1984

[54] PRESSURIZATION OF CEMENT IN BONES

4,399,814 8/1983 Pratt, Jr. et al. .... 128/92 C

[75] Inventors: Alan J. C. Lee; Robin S. M. Ling,  
both of Exeter, England

**Primary Examiner**—Richard J. Apley  
**Assistant Examiner**—David J. Isabella  
**Attorney, Agent, or Firm**—Larson and Taylor

[73] Assignee: University of Exeter, Devon,  
England

[57] **ABSTRACT**

[21] Appl. No.: 408,815

[22] Filed: Aug. 17, 1982

[51] Int. Cl.<sup>3</sup> ..... A61F 1/00; A61B 17/36

[52] U.S. Cl. .... 128/303 R; 128/92 C;  
3/1; 3/1.9

[58] **Field of Search** ..... 128/92 C, 92 CA, 92 R,  
128/92 G, 303 R; 3/1, 1.9, 1.91

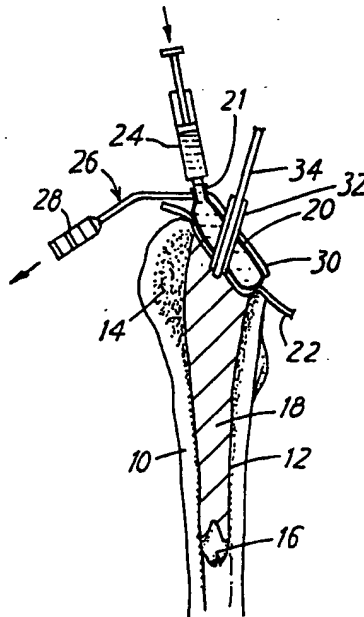
## [56] References Cited

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4,274,163	6/1981	Malcom et al. ....	3/1.91
4,338,925	7/1982	Miller .....	128/92 E

A seal member for fitting over and sealing the opening of a cavity in a bone to allow pressurization of cement in the cavity has an aperture for sealingly receiving a cement delivery nozzle. The seal member may be a balloon seal, which may be inflatable and expandable, or a solid body of conformable material. In use, the seal member is urged against the opening, e.g. by force applied by the barrel of a cement delivery gun on an abutment means having an apertured pressure piece shaped to urge the seal member against the mouth of the opening.

**12 Claims, 11 Drawing Figures**



nozzle 34 passes through the funnel portion 132 and through an aperture in the bridge portion 134. The bridge portion 134 is laterally elongate, and has a downwardly extending leg 138, 140 at each side portion. The two legs are of unequal length. Each has a lower portion 138a, 140a of reduced diameter, adapted to be received snugly in a respective blind bore 132 in the pressure piece.

In use, as shown in FIG. 9 the cement gun is pressed with its barrel end 136 abutting within the funnel portion 132 of the distance piece. The thrust is transmitted, via the legs 138, 140 engaging in the bores 132, to the pressure piece 126. This is shaped so as to urge the seal member 114 against the canal opening 12. (Note how the combination of the unequal legs 138, 140 and the unsymmetrical banana shape of the pressure piece matches the member 114 to the canal opening 12.) The nozzle 34 of the cement gun extends into the medullary cavity, so that cement can be pumped in.

If the illustrated type of fillable seal member 114 is used, it is filled with liquid (e.g. sterilised water) before the cement is pressurised, as described above with reference to FIGS. 1 to 3. If on the other hand a solid seal is used, it is forced down onto the femur by the pressure piece 126, and deforms to the shape of the bone. (Its intrinsic shape may be substantially identical to that of the member 114 as seen in FIG. 8.)

The person skilled in the art will be able to select a suitable material for making a solid seal on the basis of the information already given. By way of example, we would mention the plastics materials known by the trade names of Sorbothane and Sarathon, both produced by Professor M. Hiles, University of Akron, U.S.A. The former has been suggested for lining shoes, to take shock loads, but the latter is perhaps preferable for present purposes. A solid seal (with an aperture defined by a sleeve 118) can be made in such a material. It may be re-usable, but on grounds of hygiene it is preferable to use a new seal for each operation. This is of course much more practicable (in terms of cost) than when using a balloon seal.

Both materials are viscoelastically conformable. That is, they are resiliently deformable rather like rubber, but the deformation properties vary with the nature of the deforming force.

It may be convenient to use the pressure piece either as shown in FIGS. 7 to 9, or the other way round as shown in FIG. 10. The apparatus shown here differs only in that the pressure piece 126' has through-holes 132' and not blind bores. These holes 132' serve to seat the legs 138, 140 in either orientation of the pressure piece 126'.

FIG. 11 shows a modified abutment means 222, which differs from that of FIGS. 7 to 9 primarily in the form of the pressure piece 226. This is a shaped piece of sheet metal, rigidly attached to the legs 238, 240 of the bridge portion 234. It has a substantially straight channel-section portion, and a downwardly curving portion at one side. It is for use with a femoral seal of solid conformable polymer.

The preceding description and FIGS. 7 to 10 refer to the medullary canal of a femur. Of course the apparatus is applicable to many other situations, e.g. in filling an acetabular cavity. Different types of cavity may call for differently shaped seal members 114, and these in turn may call for differently shaped pressure pieces 126.

For example, in filling an acetabular cavity we may use a thick disc or doughnut-shaped seal member 114

made of a solid viscoelastic conformable material as described above. An appropriately configured pressure piece will be used.

Even when considering a single type of bone, e.g. the femur, there is considerable variation in form. It may be possible to produce a pressure piece whose curvature and form make it usable with (e.g.) virtually all human femurs. Alternatively, the availability of a range of pressure pieces, and/or the reversibility described with reference to FIG. 10, may be desirable.

While the invention has been illustrated above with reference to the preferred embodiments, it will be understood by those skilled in the art that various changes may be made without departing from the spirit and scope of the invention, and it is intended to cover all such changes and modifications by the appended claims.

We claim:

1. Apparatus for use in pressurization of cement in a cavity in a bone, said apparatus comprising a seal member for fitting over and sealing the opening of the cavity, said seal member being deformable and having an upper and lower substantially planar surfaces and further including a transverse aperture for sealingly receiving a cement delivery nozzle extending through a central region thereof, said seal member being dimensioned and arranged so as to be urgeable transversely, with a said nozzle extending through said aperture in sealing relationship with the portions of said seal member defining the aperture, with deformation of the seal member, said lower planar surface disposed in substantially coplanar relationship with the surfaces of the bone defining the opening of the cavity so as not to invade the cavity and to extend beyond the edges of the opening of the cavity to contact the surfaces of the bone defining the cavity to provide sealing around the cavity, said seal member further providing sealing directly around the delivery nozzle, whereby cement under pressure can be passed through the nozzle into the sealed cavity and provide complete filling of the cavity.

2. Apparatus according to claim 1 wherein the seal member comprises a flexible, liquid-containing bag deformable to facilitate sealing at an irregularly-shaped cavity opening.

3. Apparatus according to claim 2 wherein the bag has means for inflation with liquid.

4. Apparatus according to claim 3 wherein the bag is resiliently extendible by inflation.

5. Apparatus according to claim 1 wherein the seal member comprises a substantially solid body.

6. Apparatus according to claim 1 further including abutment means adapted to overlie the seal member and having an aperture therethrough arranged to receive said delivery nozzle; said abutment means having means for urging it to urge said seal member against said bone cavity opening.

7. Apparatus according to claim 6 wherein in use, said delivery nozzle is provided by a dispensing means and wherein said urging means is an abutment surface of the abutment means arranged to be abutable against by a said dispensing means.

8. Apparatus according to claim 7 wherein said abutment means comprises an apertured pressure piece shaped to urge the seal member against the cavity opening.

9. Apparatus according to claim 8 wherein said pressure piece is substantially banana-shaped.

10. Apparatus according to claim 8 wherein the abutment surface is provided by an abutment assembly comprising an apertured bridge piece arranged to contact the pressure piece on either side of its aperture, and a receiving portion adapted to receive an end portion of said dispensing means. 5

11. Apparatus according to claim 5 wherein said substantially solid body is of a viscoelastically conformable material.

12. A method of pressurizing cement in a cavity in a bone in a surgical procedure, said method comprising the steps of:

placing a seal member over the bone around the open end of the cavity in substantially co-planar relation-

ship with the surfaces of the bone defining the cavity opening so as not to invade the cavity, said seal member having an aperture therethrough and being of a size such that the seal member extends beyond the edges of cavity and contacts the surfaces of the bone defining the cavity; causing a cement delivering nozzle to extend sealingly through said aperture; and passing cement through said nozzle into the cavity while urging said seal member to seal said cavity, so as to completely fill said cavity including the uppermost portion of the cavity adjacent to the cavity opening. . . . .

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45/7/8 (Item 8 from file: 350) [Links](#)

Derwent WPIX

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0015677095 *Drawing available*

WPI Acc no: 2006-241285/200625

XRAM Acc no: C2006-078946

XRPX Acc No: N2006-206980

**Bone cement delivery needle has vibration assembly that is arranged in handle extending from sheath, to agitate cement**

Patent Assignee: MURPHY K P J (MURP-I)

Inventor: MURPHY K P J

*LATE DATE, BUT*

*SEE CITED REFS*

*FROM SEARCH  
REPORT*

Patent Family ( 1 patents, 109 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2006031490	A1	20060323	WO 2005US31605	A	20050906	200625	B

Priority Applications (no., kind, date): US 2004608620 P 20040910

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
WO 2006031490	A1	EN	45	15	
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW				
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU LV MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW				

the lumen 30 of the tubular element 12. When being coaxially surrounded by the tubular element 12, the distal end 16 of the guidewire 14 is stretched or bent into a configuration that has a relatively smaller cross-sectional profile. The guidewire 14 is then advanced distally by manipulating the proximal end 18 of the guidewire 14, or the handle 22, if one is provided. When the distal end 16 of the guidewire 14 exits the lumen 30 of the tubular element 12, it assumes a second profile, e.g., a profile with an expanded configuration. Outside the tubular element 12, the distal end 16 of the guidewire 14 engages or comes in contact with the target bone tissue. (FIG. 14C) Because the guidewire is stiffer than the degenerated tissue at the target site 150, the guidewire 14 cut into the degenerated bone tissue when it emerges from the tubular element 12.

[0070] As shown in FIG. 14C, torsional motion, as represented by arrow 166, and axial motion, as represented by arrow 168, may be applied to the proximal end 18 of the guidewire 14, or to the handle 22 if one is provided, so that the removal element 32 at the distal end 16 of the guidewire 14 may engage the target bone tissue at the target site 150. The torsional motion and the axial motion may be applied manually or mechanically (i.e. by a machine). Depending on the configuration and type of the removal element 32, the removal element 32 may cut through the target bone tissue at the target site 150, and/or may deform the target bone tissue by compressing it against the adjacent healthy bone tissue, while the torsional and/or axial motion is being applied to the guidewire 14. When a desired amount of bone tissue is cut or pressed against the adjacent healthy bone tissue, a void 164 is created. A device (not shown) attaching to the proximal end 28 of the tubular element 12 may be used to create suction within the lumen 30 of the tubular element 12 to remove bone tissue matrices during the void-creation process.

[0071] If the device 10 includes a bead 60, such as that shown in FIG. 6, the bead 60 may be used to create the channel 162 and the void 164 in the vertebra 152. In this case, the motor 62 causes the bead 60 to rotate about the guidewire 14. The bead 60 may be navigated to the desired target site 150 by rotating and axially positioning the proximal end 18 of the guidewire 14, or the handle 22 if one is provided. The bead 60 may also be guided along a non-linear path by advancing or retracting the bead 60 relative to the guidewire 14 having a non-linear distal end, as discussed previously. If a marker 90 such as those shown in FIGS. 8A to 8D is provided, it may be used to help determine the orientation of the distal end of the guidewire 14, as discussed previously. Once the bead 60 reaches the target site 150, the bead 60 may be navigated through the target bone tissue to create the desired void.

[0072] If the device 10 includes an expandable cutting basket 70, as described previously with reference to FIGS. 7A to 7D, the expandable cutting basket 70 may be advanced distally until it emerges from the distal end 26 of the tubular element 12 and reaches the target bone tissue. The expandable cutting basket 70 is then expanded either manually or by its self-expanding characteristic. Turning the proximal end 18 of the guidewire 14, or the handle 22 if one is provided, then rotates the cutting basket 70. Alternatively, a machine connecting to a proximal end of the cutting basket 70 can be used to rotate the cutting basket 70. The rotation

of the cutting basket 70 helps remove target bone tissue at the target site 150, creating the desired void.

[0073] If the device 10 includes an electrode at the distal end 16 of the guidewire 14, the electrode may be used to ablate target bone tissue and create a lesion at the target site 150.

[0074] Once the void 164 is created, if the size or geometry of the void 164 is not sufficient to cover the entire portion of the target site 150, the delivery device 10 may be oriented to aim at the target site 150 using a different angle 170 selected relative to the axis 154, and the same steps discussed previously may be repeated until a desired geometry and/or size of the void is achieved. (FIG. 14D) In addition, the same steps are preferably repeated on the opposite side of the vertebra 152 in order to create a void 164 that is somewhat symmetric about the axis 171 of the vertebra 152.

[0075] Once the void 164 is completely created, the tubular element 12 is then used to deliver a media 172 to the void 164. (FIG. 14E) The media 172 may include granular implants or particles, such as "calcium salts", including ACP, TCP, and  $\text{CaSO}_4$ ,  $\text{CaPO}_4$ , Hydroxylapatite (HA), Calcium Aluminate, etc. The media 172 may also include bone cement such as PMMA or the like, and other biomaterials such as donor tissue. The implants or particles or granules within the media 172 may have approximately the same size, or alternatively, may have a distribution of sizes. It should be noted that the type of media 172 being used does not limit the scope of the invention, and that media 172 having other compositions may also be used as long as it is suitable for the particular application. The guidewire 14 may remain within the lumen 30 of the tubular element 12 while the media 172 is being delivered by the tubular element 12. Alternatively, the guidewire 14 may be extracted from the tubular element 12 before delivering the media 172. In either case, the lumen 30 of the tubular element 12 may be used to delivery the media 172. Alternatively, the delivery device 10 may include a second tubular element (not shown) positioned coaxially within the lumen 30 of the tubular element 12 for delivery of the media 172.

[0076] If the delivery device 10 includes a vibration device 100, such as that shown in FIG. 9, it may be used to compact the media 172 contained within the void 164. (FIG. 14F) While the distal tip of the guidewire 14 is still within the media 172, the vibration device 100 is activated and causes the guidewire 14 to vibrate. The vibration at the distal end of the guidewire 14 in turn mobilizes the particles or granules within the media 172. In this process, the particles or granules rearrange themselves to mechanically interlock or interdigitate with one another, forming a more stable and tightly knitted structure within the media 172. This results in a media having good consistency and a media that could develop adequate structural strength.

[0077] If the delivery device 10 does not include a vibration device, the compaction may be performed by manually tapping the proximal end 18 of the guidewire 14. Alternatively, a separate compaction device such as that shown in FIG. 13 may be used to compact the media 172 within the void 164. In this case, the elongate member 130 of the compaction device 128 is inserted into the lumen 30 of the tubular element 12 and is advanced distally until the distal end of the elongate member 130 emerges from the distal end

Set	Items	Description
S1	1427271	S OSTE? OR OSSO? OR OSTO? OR OSSE? OR ENDOSTE? OR PERIOSTE?
S2	3912563	S BONE? ? OR ORTHOPED? OR ORTHOPAED? OR OSSEOUS? OR SKELET?
S3	343216	S OSTEAL OR OSTEOID OR OSSEO? OR OSTEOLOG? OR PERIOSTE??? OR OSSIF? OR FEMUR?
S4	527692	S TIBIA? OR MUSCULOSKELET? OR HUMER? OR FIBULA?
S5	2729438	S ADHESIV? OR BOND? OR CEMENT? OR HARDEN?()COMPOSITION?
S6	339770	S MUCILAG? OR GLUE? OR GLUING OR PASTE?
S7	631603	S EPOX? OR CENTIPOIS? OR ELASTIC()MODULUS? OR CYANOACRYL?
S8	122145	S S1:S4 AND S5:S7
S9	1035	S NEEDLE? OR CONDUIT? OR STYLET? OR STYLUS? OR TROCAR? OR PUNCTURER? OR PUNCTURING? OR PENETRATING?
S10	3541	S INJECTOR? OR INJECTING? OR INJECTION? OR INJECTER? OR SPIKE? OR LANCE? ? OR LANCET? OR PENETRAT?R?
S11	906	S LANCING? OR SHARP? OR DELIVERER? OR INTRODUCER? OR (DELIV? OR INTRODUC? OR INJECT?) () (DEVICE? OR TOOL? OR APPARATUS?)
S12	7907	S HOLDER? OR HARDWARE? OR DEVICE? OR APPARATUS? OR WORKPIECE? OR VISE? OR CLAMP? OR SCAFFOLD?
S13	22185	S JAW OR JAWS OR CLAMP? OR WORKHOLDER? OR GRIP? ? OR SUPPORT? ? OR BRACKET? OR PANTOGRAM?
S14	296	S BRACE? OR STABILIZER? OR STABILISER? OR GRIPPER? OR SECURING() (DEVICE? OR APPARATUS?)
S15	2137	S VIBRAT? OR OSCILLAT? OR SHIMMY? OR SHIMMIE? OR WOBBL? OR TREMBL? OR TREMOR?
S16	227	S SHAKE? OR SHAKING? OR QUIVER? OR AGITAT? OR RECIPROCAT?
S17	60	S S8 AND S9:S11 AND S15:S16
S18	54715	S S1:S17(10N) (METHOD? OR TECHNIQ? OR PROCESS?? OR PROCEDUR? OR MANNER? OR MODE? OR SYSTEM?)
S19	88	S AU=(YETKINLER D? OR YETKINLER, D? OR DELANEY D? OR DELANEY, D? OR CONSTANTZ B? OR CONSTANTZ, B?)
S20	0	S YETKINLER(2N) DURAN OR DELANEY(2N) (DAVID OR DAVE) OR CONSTANTZ(2N) BRENT
S21	37	S S17 AND (S18:S20 OR S12:S14)
S22	60	S S17 OR S21
S23	53	S S22 AND PY=1970:2004
S24	54	S S22 NOT PY=2005:2007
S25	54	S S23:S24
S26	36	RD (unique items)

; show files

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[File 434] **SciSearch(R) Cited Ref Sci** 1974-1989/Dec  
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26/5,K/30 (Item 1 from file: 95) [Links](#)

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TEME-Technology & Management

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01554714 20011000758

### **Rheological properties of PMMA bone cements during curing**

( Untersuchung der rheologischen Eigenschaften von PMMA-Knochenzement waehrend des Aushaertens )

Farrar, DF; Rose, J

Smith a. Nephew Group res. Centre, Heslington, GB

Biomaterials, v22, n22, pp3005-3013 , 2001

**Document type:** journal article **Language:** English

**Record type:** Abstract

ISSN: 0142-9612

#### **Abstract:**

Manual manipulation requires a **cement** which rapidly reaches a doughy state. Conversely, **injection** requires a **cement** which maintains a low viscosity. The rheological behaviour of poly(methyl methacrylate) **bone cements** has been characterised during the curing phase using an **oscillating** parallel plate rheometer. Viscosity has been measured as a function of time for a range of commercial **cements** showing different viscosity-time profiles. Measurements have been made over a range of temperatures from 19 - 25 deg C, and the results show a strong dependence of rate of viscosity rise on temperature. Viscoelastic parameters, such as storage modulus, loss modulus and phase angle have been obtained and show the change from primarily viscous to elastic behaviour as the **cements** set. It is suggested that these parameters more completely describe the rheological behaviour of **bone cements** than viscosity alone and may provide a better measure of handling and setting characteristics.

**Descriptors:** BONE CEMENT; RHEOLOGICAL PROPERTIES; ACRYL GLASS; VISCOSITY; ELASTICO VISCOUS LIQUIDS; VISCOSIMETERS; COULOM MODULUS; CURING PROCESS

**Identifiers:** rheologische Eigenschaft; Knochenzement; Aushaertung

**Rheological properties of PMMA bone cements during curing , 2001**

#### **Abstract:**

Manual manipulation requires a **cement** which rapidly reaches a doughy state. Conversely, **injection** requires a **cement** which maintains a low viscosity. The rheological behaviour of poly(methyl methacrylate) **bone cements** has been characterised during the curing phase using an **oscillating** parallel plate rheometer. Viscosity has been measured as a function of time for a range of commercial **cements** showing different viscosity-time profiles. Measurements have been made over a range of temperatures from... ..have been obtained and show the change from primarily viscous to elastic behaviour as the **cements** set. It is suggested that these parameters more completely describe the rheological behaviour of **bone cements** than viscosity alone and may provide a better measure of handling and setting characteristics.

**Descriptors:** BONE CEMENT; RHEOLOGICAL PROPERTIES; ACRYL GLASS; VISCOSITY; ELASTICO VISCOUS LIQUIDS; VISCOSIMETERS; COULOM MODULUS; CURING PROCESS

26/5,K/22 (Item 3 from file: 73) [Links](#)

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EMBASE

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11070115 EMBASE No: 2001085734

**In vitro evaluation of a malleus head to stapes head 'incus replica' prosthesis**

Mills R.; Abel E.; Lord R.

Dr. R. Mills, Department of Otolaryngology, Lauriston Building, Royal Infirmary of Edinburgh, Lauriston Place, Edinburgh EH3 9YW United Kingdom

Journal of Laryngology and Otology ( J. LARYNGOL. OTOL. ) ( United Kingdom ) 2001 , 115/2 (97-100)

**CODEN:** JLOTA **ISSN:** 0022-2151

**Document Type:** Journal ; Article

**Language:** ENGLISH **Summary Language:** ENGLISH

**Number Of References:** 15

An ossicular prosthesis produced by making a mould from a cadaveric incus and **injecting** ionomeric **cement** into it (incus replica prosthesis, IRP) has been **cemented** to the malleus head and stapes head and evaluated in fresh human temporal **bones** using a laser vibrometer. Stapes velocity was recorded under acoustic stimulation and foot plate displacements were derived. Fourteen frequencies between 125 Hz and 8000 Hz have been used. Measurements were made with the ossicular chain intact, following removal of the incus, with the prosthesis **cemented** to the malleus, but not the stapes, and with the incudo-stapedial joint **cemented**. In a second series of experiments the performance of the IRP was compared with that of a Causse partial ossicular replacement prosthesis, using the same experimental set-up. The results indicate that the prosthesis performs almost as well as the intact ossicular chain and that **cementing** the incudo-stapedial joint gives better sound transmission than leaving it uncemented. In addition the IRP outperforms the conventional partial ossicular replacement prosthesis.

**Device Brand Name/Manufacturer Name:** Biochem/Corinthian Medical

**Device Manufacturer Names:** Corinthian Medical; Polytec

**MEDICAL DESCRIPTORS:**

\* middle ear prosthesis

malleus; stapes; incus; cadaver; temporal **bone**; auditory stimulation ; laser; **device**; **vibration**; velocity; article

**SECTION HEADINGS:**

011 Otorhinolaryngology

027 Biophysics, Bioengineering and Medical Instrumentation

An ossicular prosthesis produced by making a mould from a cadaveric incus and **injecting** ionomeric **cement** into it (incus replica prosthesis, IRP) has been **cemented** to the malleus head and stapes head and evaluated in fresh human temporal **bones** using a laser vibrometer. Stapes velocity was recorded under acoustic stimulation and foot plate displacements... ..were made with the ossicular chain intact, following removal of the incus, with the prosthesis **cemented** to the malleus, but not the stapes, and with the incudo-stapedial joint **cemented**. In a second series of experiments the performance of the IRP was compared with that... ..indicate that the prosthesis performs almost as well as the intact ossicular chain and that **cementing** the incudo-stapedial joint gives better sound transmission than leaving it uncemented. In addition the...

**MEDICAL DESCRIPTORS:**

malleus; stapes; incus; cadaver; temporal **bone**; auditory stimulation ; laser; **device**; **vibration**; velocity; article

**Emtree Codes:** 2001

26/5,K/5 (Item 2 from file: 5) [Links](#)

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Biosis Previews(R)

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17540473 **Biosis No.:** 200300509192

**Process for mixing and dispensing a flowable substance**

**Author:** Speitling Andreas Werner (Reprint)

**Author Address:** Kiel, Germany\*\*Germany

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1274 ( 5 ): Sep. 30, 2003 **2003**

**Medium:** e-file

**Patent Number:** US 6626912 **Patent Date Granted:** September 30, 2003 20030930 **Patent Classification:**

606-92 **Patent Assignee:** Stryker Trauma GmbH, Germany **Patent Country:** USA

**ISSN:** 0098-1133 (ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A **process** and **apparatus** for use in mixing and applying a flowable substance that consists of a powdered first component and a liquid second component. The mixing of the two components form a flowable substance, especially a **bone cement**. The **apparatus** uses an **injection** syringe. The first component is placed into the **injection** syringe after removing the syringe plunger and placing a closing **device** or cap onto the dispensing end of the syringe. The liquid component is added to the syringe, preferably from a second syringe filled with the liquid component via a hollow **needle** of the second syringe. The first syringe is closed at the filling with the syringe plunger under the load of sufficient air in the syringe cylinder. The components are mixed by **shaking** the first syringe. The lid of the first syringe is removed and a hollow **needle** is placed onto the first syringe and the flowable substance is delivered at a desired site.

**Descriptors:**

**Major Concepts:** Equipment **Apparatus** Devices and Instruments; Methods and Techniques;

**Orthopedics--Human Medicine, Medical Sciences**

**Methods & Equipment:** flowable substance application **apparatus**--medical equipment; flowable substance application method--clinical techniques, therapeutic and prophylactic techniques; flowable substance mixing **apparatus**-- medical equipment; flowable substance mixing method--clinical techniques, therapeutic and prophylactic techniques

**Miscellaneous Terms:** **bone cement**

**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

**2003**

**Abstract:** A **process** and **apparatus** for use in mixing and applying a flowable substance that consists of a powdered first... ..liquid second component. The mixing of the two components form a flowable substance, especially a **bone cement**. The **apparatus** uses an **injection** syringe. The first component is placed into the **injection** syringe after removing the syringe plunger and placing a closing **device** or cap onto the dispensing end of the syringe. The liquid component is added to the syringe, preferably from a second syringe filled with the liquid component via a hollow **needle** of the second syringe. The first syringe is closed at the filling with the syringe... ..under the load of sufficient air in the syringe cylinder. The components are mixed by **shaking** the first syringe. The

lid of the first syringe is removed and a hollow **needle** is placed onto the first syringe and the flowable substance is delivered at a desired...

**Descriptors:**

**Major Concepts:** Equipment **Apparatus Devices** and Instruments... ..**Orthopedics--**

**Methods & Equipment:** flowable substance application **apparatus--...** ...flowable substance mixing **apparatus--**

**Miscellaneous Terms:** **bone cement**

26/5,K/4 (Item 1 from file: 5) [Links](#)

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17724488 Biosis No.: 200400093257

**Influence of oscillatory mixing on the injectability of three acrylic and two calcium-phosphate bone cements for vertebroplasty.**

**Author:** Baroud G (Reprint); Matsushita C; Samara M; Beckman L; Steffen T

**Author Address:** Orthopaedic Research Laboratory, Division of Orthopaedic Surgery, McGill University, Royal Victoria Hospital, 687 Pine Avenue West, Rm. L4.65, Montreal, PQ, H3A 1A1, Canada\*\*Canada

**Author E-mail Address:** gbaroud@orl.mcgill.ca

**Journal:** Journal of Biomedical Materials Research 68B ( 1 ): p 105-111 January 15, 2004 2004

**Medium:** print

**ISSN:** 0021-9304 (ISSN print)

**Document Type:** Article

**Record Type:** Abstract

**Language:** English

**Abstract:** Injecting acrylic and, increasingly, calcium-phosphate cements into the porous bone structure is an emerging procedure, referred to as vertebroplasty, for the augmentation of osteoporotic vertebrae. Despite the benefits of vertebroplasty, it has limitations. The limitations of interest in this study are the injectability of bone cements and their mixing variability (i.e., low reproducibility of resulting viscosity). The objective of this study is to investigate the effect of oscillatory versus manual mixing on cement viscosity and mixing variability. Five cements are tested: (a) VertebroplasticTM, (b) DP-PourTM, (c) Antibiotic Simplex(R), (d) chronOS InjectTM, and (e) BiopexTM. Compared to manual mixing, oscillatory mixing significantly decreased the mean viscosity and the mixing variability, which was inferred from the coefficient of variation. For example, under oscillatory mixing, the viscosity and the variability for Vertebroplastic decreased to one-third of the corresponding values for manual mixing. Similar results were obtained for the other cements. The decrease in viscosity is attributed to the pseudo-plastic behavior of bone cements. The decrease in the variability of cement viscosity was attributed to greater dispersive mixing of the cement components under oscillatory mixing. The decrease in viscosity eases the injection by reducing the pressure required. The decrease in the variability of cement viscosity increases reproducibility of the cement injection. Oscillatory mixing appears to have the potential to contribute to improving vertebroplasty.

**Descriptors:**

**Major Concepts:** Biomaterials; Methods and Techniques; Skeletal System-- Movement and Support

**Organisms: Parts Etc:** bone--skeletal system; vertebrae--skeletal system

**Diseases:** osteoporosis--bone disease

**Mesh Terms:** Osteoporosis (MeSH)

**Chemicals & Biochemicals:** Antibiotic Simplex bone cement--biomaterial; Biopex bone cement--biomaterial; DP-Pour bone cement--biomaterial; Vertebroplastic bone cement--biomaterial; chronOS Inject bone cement--biomaterial

**Methods & Equipment:** manual mixing--laboratory techniques; oscillatory mixing--laboratory techniques; vertebroplasty--clinical techniques, therapeutic and prophylactic techniques

**Miscellaneous Terms:** bone-cement viscosity; mixing variability

**Concept Codes:**

10511 Biophysics - Bioengineering

18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

**Influence of oscillatory mixing on the injectability of three acrylic and two calcium-phosphate bone cements for vertebroplasty.**

**2004**

**Abstract:** Injecting acrylic and, increasingly, calcium-phosphate cements into the porous bone structure is an emerging procedure, referred to as vertebroplasty, for the augmentation of osteoporotic vertebrae. Despite the benefits of vertebroplasty, it has limitations. The limitations of interest in this study are the injectability of bone cements and their mixing variability (i.e., low reproducibility of resulting viscosity). The objective of this study is to investigate the effect of oscillatory versus manual mixing on cement viscosity and mixing variability. Five cements are tested: (a) VertebroplasticTM, (b) DP-PourTM, (c) Antibiotic Simplex(R), (d) chronOS InjectTM, and (e) BiopexTM. Compared to manual mixing, oscillatory mixing significantly decreased the mean viscosity and the mixing variability, which was inferred from the coefficient of variation. For example, under oscillatory mixing, the viscosity and the variability for Vertebroplastic decreased to one-third of the corresponding values for manual mixing. Similar results were obtained for the other cements. The decrease in viscosity is attributed to the pseudo-plastic behavior of bone cements. The decrease in the variability of cement viscosity was attributed to greater dispersive mixing of the cement components under oscillatory mixing. The decrease in viscosity eases the injection by reducing the pressure required. The decrease in the variability of cement viscosity increases reproducibility of the cement injection. Oscillatory mixing appears to have the potential to contribute to improving vertebroplasty.

**Descriptors:**

**Major Concepts:** ...Skeletal System--... ...Movement and Support

**Organisms:** Parts Etc: bone--... ...skeletal system; ... ...skeletal system

**Diseases:** ...bone disease

**Chemicals & Biochemicals:** Antibiotic Simplex bone cement--... ...Biopex bone cement--... ...DP-Pour bone cement--... ...Vertebroplastic bone cement--... ...chronOS Inject bone cement--

**Methods & Equipment:** ...oscillatory mixing

**Miscellaneous Terms:** bone-cement viscosity...

26/5,K/7 (Item 4 from file: 5) [Links](#)

Fulltext available through: [USPTO Full Text Retrieval Options](#) [ScienceDirect](#)

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11733194 **Biosis No.:** 199395035460

**The effect of polymethylmethacrylate bone cement vibration on the bone-cement interface**

**Author:** Thomas Andrew M C (Reprint); McMinn D J W; Haddaway M; McCall I W

**Author Address:** Royal Orthopaedic Hosp., Woodlands, Northfield, Birmingham B31 2AP, UK\*\*UK

**Journal:** Cells and Materials 2 ( 2 ): p 163-168 1992

**ISSN:** 1051-6794

**Document Type:** Article

**Record Type:** Abstract

**Language:** English

**Abstract:** Low frequency **vibration** of polymethylmethacrylate (PMMA) **bone cement** reduces the viscosity of the **cement** by shear thinning. The effect of this low frequency **vibration** on the **bone- cement** interface was studied using microfocal radiography (MFR) and scanning electron microscopy (SEM). Effects were studied in vitro and in vivo. In vitro, samples of Palacos low viscosity PMMA were placed on blocks of Kiel **bone** and **vibrated**. MFR and SEM demonstrated an improvement in the appearance of the **bone-cement** interface. In vivo, PMMA was injected into the upper **tibia** of the dog. An assessment of the effect of high and low pressure **injection**, and the effect of added low frequency **vibration** of the **cement** was made. The effect on **cement** penetration was studied using MFR and SEM. It was found that **vibration** produced an improved **bone- cement** interface compared to low pressure **injection**, and an interface comparable to that obtained with high pressure **injection**.

**Registry Numbers:** 9011-14-7: POLYMETHYLMETHACRYLATE

**Descriptors:**

**Major Concepts:** Biochemistry and Molecular Biophysics; Methods and Techniques; Morphology; **Skeletal System--Movement and Support**

**Biosystematic Names:** Canidae--Carnivora, Mammalia, Vertebrata, Chordata, Animalia

**Organisms:** dog (Canidae)

**Common Taxonomic Terms:** Animals; Carnivores; Chordates; Mammals; Nonhuman Vertebrates; Nonhuman Mammals; Vertebrates

**Chemicals & Biochemicals:** POLYMETHYLMETHACRYLATE

**Miscellaneous Terms:** METHOD; MICROFOCAL RADIOGRAPHY; SCANNING ELECTRON MICROSCOPY

**Concept Codes:**

01012 Methods - Photography

01058 Microscopy - Electron microscopy

06504 Radiation biology - Radiation and isotope techniques

10060 Biochemistry studies - General

10506 Biophysics - Molecular properties and macromolecules

10511 Biophysics - Bioengineering

11106 Anatomy and Histology - Radiologic anatomy

11108 Anatomy and Histology - Microscopic and ultramicroscopic anatomy

18001 Bones, joints, fasciae, connective and adipose tissue - General and methods

18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry



**Biosystematic Codes:**

85765 Canidae

**The effect of polymethylmethacrylate bone cement vibration on the bone-cement interface  
1992**

**Abstract:** Low frequency vibration of polymethylmethacrylate (PMMA) bone cement reduces the viscosity of the cement by shear thinning. The effect of this low frequency vibration on the bone- cement interface was studied using microfocal radiography (MFR) and scanning electron microscopy (SEM). Effects were studied... ..vivo. In vitro, samples of Palacos low viscosity PMMA were placed on blocks of Kiel bone and vibrated. MFR and SEM demonstrated an improvement in the appearance of the bone-cement interface. In vivo, PMMA was injected into the upper tibia of the dog. An assessment of the effect of high and low pressure injection, and the effect of added low frequency vibration of the cement was made. The effect on cement penetration was studied using MFR and SEM. It was found that vibration produced an improved bone-cement interface compared to low pressure injection, and an interface comparable to that obtained with high pressure injection.

**Descriptors:**

**Major Concepts:** ...Skeletal System--... ..Movement and Support

24/7/1 (Item 1 from file: 350) [Links](#)

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0015929424 *Drawing available*

WPI Acc no: 2006-461082/200647

Related WPI Acc No: 2005-232214; 2005-233403; 2005-271631

XRAM Acc no: C2006-144705

XRPX Acc No: N2006-376686

**Introduction of orthopedic cement composition to target bone site for orthopedic and dental applications, by delivering cement composition to the target site through passageway of hard tissue securing device while applying vibratory force**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20060100636	A1	20060511	US 2004797907	A	20040309	200647	B
			US 2004900019	A	20040726		
			US 2005244435	A	20051004		

Priority Applications (no., kind, date): US 2004900019 A 20040726; US 2004797907 A 20040309; US 2005244435 A 20051004

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20060100636	A1	EN	19	7	C-I-P of application	US 2004797907
					C-I-P of application	US 2004900019

#### Alerting Abstract US A1

**NOVELTY** - An orthopedic cement composition is introduced to a target bone site by implanting a hard tissue securing device having a passageway at the target bone site, and delivering the cement composition to the target bone site through the passageway while a vibratory force is applied to the securing device.

**DESCRIPTION** - INDEPENDENT CLAIMS are also included for:

24/7/2 (Item 2 from file: 350) [Links](#)

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0015525363

WPI Acc no: 2006-089512/200609

XRAM Acc no: C2006-032276

**Method for producing a flowable composition (which sets into calcium phosphate containing product), useful to repair hard tissue defects e.g. bone defects, comprises combining a setting fluid and a dry reactant component**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 3 patents, 109 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20060018974	A1	20060126	US 2004900029	A	20040726	200609	B
WO 2006014886	A2	20060209	WO 2005US26369	A	20050725	200612	E
US 7175858	B2	20070213	US 2004900029	A	20040726	200714	E

Priority Applications (no., kind, date): US 2004900029 A 20040726

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20060018974	A1	EN	9	0		
WO 2006014886	A2	EN				
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU LV MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					

24/7/3 (Item 3 from file: 350) [Links](#)

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0015482894

WPI Acc no: 2006-008317/200601

Related WPI Acc No: 2005-796085

XRAM Acc no: C2006-002316

**Production of calcium phosphate composition for kit, involves combining preset amount of setting fluid, dry reactants containing calcium and phosphate sources and monovalent cation dihydrogen phosphate salt, and emulsifying agent**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050260279	A1	20051124	US 2004850985	A	20040520	200601	B
			US 2005134051	A	20050519		

Priority Applications (no., kind, date): US 2004850985 A 20040520; US 2005134051 A 20050519

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20050260279	A1	EN	12	0	C-I-P of application	US 2004850985

#### Alerting Abstract US A1

NOVELTY - Producing calcium phosphate composition which sets into strong calcium phosphate containing product, comprising mixing a setting fluid (a), dry reactants (b) containing calcium and phosphate sources (i) and a monovalent cation dihydrogen phosphate salt (ii), and an emulsifying agent (c), in preset ratio, is new.

DESCRIPTION - INDEPENDENT CLAIMS are also included for:

24/7/4 (Item 4 from file: 350) [Links](#)

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0015471199

WPI Acc no: 2005-808960/200582

XRAM Acc no: C2005-248685

XRFX Acc No: N2005-670714

**Production of a composition that sets into a solid product, useful to repair a hard tissue defect, comprises combining a setting fluid, dry reactant and a contrast agent comprising a particulate barium apatite**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 3 patents, 110 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050257714	A1	20051124	US 2004851766	A	20040520	200582	B
WO 2005112851	A2	20051201	WO 2005US17922	A	20050519	200582	E
EP 1746958	A2	20070131	EP 2005753827	A	20050519	200712	E
			WO 2005US17922	A	20050519		

Priority Applications (no., kind, date): US 2004851766 A 20040520

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20050257714	A1	EN	10	1		
WO 2005112851	A2	EN				
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					
EP 1746958	A2	EN			PCT Application	WO 2005US17922
					Based on OPI patent	WO 2005112851
Regional Designated States,Original	AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR					

24/7/5 (Item 5 from file: 350) [Links](#)

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0015370648

WPI Acc no: 2005-796085/200581

Related WPI Acc No: 2006-008317

XRAM Acc no: C2005-245266

**Production of composition useful for repairing a hard tissue defect involves combining setting fluid; and dry reactants containing calcium and phosphate sources, and monovalent cation dihydrogen phosphate salt**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D; CONSTANTZ B**

Patent Family ( 3 patents, 110 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050260278	A1	20051124	US 2004850985	A	20040520	200581	B
WO 2005112958	A2	20051201	WO 2005US17959	A	20050519	200581	E
EP 1746974	A2	20070131	EP 2005751968	A	20050519	200712	E
			WO 2005US17959	A	20050519		

Priority Applications (no., kind, date): US 2004850985 A 20040520

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20050260278	A1	EN	9	0		
WO 2005112958	A2	EN				
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					
EP 1746974	A2	EN			PCT Application	WO 2005US17959
					Based on OPI patent	WO 2005112958
Regional Designated States,Original	AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR					

24/7/6 (Item 6 from file: 350) [Links](#)

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0015006888

WPI Acc no: 2005-354793/200536

XRAM Acc no: C2005-109719

**Production of flowable composition, e.g. paste, that sets into calcium phosphate-containing product, comprises combining setting fluid, dry reactants having calcium source and phosphate source, and osteoclastogenic agent**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N)

Inventor: **CONSTANTZ B R; DELANEY D**

Patent Family ( 2 patents, 106 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050106260	A1	20050519	US 2003717171	A	20031118	200536	B
WO 2005048877	A2	20050602	WO 2004US38852	A	20041117	200536	E

Priority Applications (no., kind, date): US 2003717171 A 20031118

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20050106260	A1	EN	8	0		
WO 2005048877	A2	EN				
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					

#### Alerting Abstract US A1

NOVELTY - Flowable composition that sets into a calcium phosphate containing product is produced by, combining setting fluid, dry reactants having calcium source and phosphate source, and osteoclastogenic agent in a ratio sufficient to produce the flowable material.

DESCRIPTION - INDEPENDENT CLAIMS are also included for:

24/7/7 (Item 7 from file: 350) [Links](#)

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0014923931 *Drawing available*

WPI Acc no: 2005-271631/200528

Related WPI Acc No: 2005-232214; 2005-233403; 2006-461082

XRAM Acc no: C2005-084938

XPX Acc No: N2005-223093

**Introducing a flowable orthopedic calcium phosphate cement composition to a target bone site, e.g. cancellous bone of vertebral body, involves delivering the cement composition to the target bone site in conjunction with vibration**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050058717	A1	20050317	US 2003661356	A	20030911	200528	B

Priority Applications (no., kind, date): US 2003661356 A 20030911

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
US 20050058717	A1	EN	12	6	

#### Alerting Abstract US A1

NOVELTY - Introducing a flowable orthopedic calcium phosphate cement composition to a target bone site, involves delivering the flowable orthopedic cement composition to the target bone site in conjunction with vibration.

DESCRIPTION - An INDEPENDENT CLAIM is also included for a system device and kit for delivering orthopedic cement to a target bone site, comprising:

1. a delivery device for the cement comprising a flowable composition introduction element; and
2. vibratory element (10) for vibrating the flowable composition introduction element.



24/7/8 (Item 8 from file: 350) [Links](#)

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0014885663 *Drawing available*

WPI Acc no: 2005-233403/200524

Related WPI Acc No: 2005-232214; 2005-271631; 2006-461082

XRAM Acc no: C2005-176159

XRPX Acc No: N2005-478643

**Use of bone defect filling cement in orthopedic and dental applications comprises employing vibration in conjunction with cement**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N); YETKINLER D (YETK-I)

Inventor: **CONSTANTZ B R; DELANEY D; YETKINLER D**

Patent Family ( 2 patents, 106 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2005025450	A2	20050324	WO 2004US29579	A	20040910	200524	B
US 20050070914	A1	20050331	US 2003661356	A	20030911	200524	E
			US 2004797907	A	20040309		
			US 2004900019	A	20040726		

Priority Applications (no., kind, date): US 2004797907 A 20040309; US 2003661356 A 20030911; US 2004900019 A 20040726

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
WO 2005025450	A2	EN	44	8		
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					
US 20050070914	A1	EN			C-I-P of application	US 2003661356
					C-I-P of application	US 2004797907

24/7/10 (Item 10 from file: 350) [Links](#)

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0014784001

WPI Acc no: 2005-131684/200514

XRAM Acc no: C2005-043288

XRPX Acc No: N2005-112898

**Production of flowable composition for use e.g. in repairing hard tissue defects such as bone defects, by combining setting fluid, dry reactants comprising calcium and phosphate sources, and water-soluble contrast agent**

Patent Assignee: CONSTANTZ B (CONS-I); DELANEY D (DELA-I)

Inventor: **CONSTANTZ B; DELANEY D**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050023171	A1	20050203	US 2003629321	A	20030728	200514	B

Priority Applications (no., kind, date): US 2003629321 A 20030728

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
US 20050023171	A1	EN	8	0	

**Alerting Abstract US A1**

NOVELTY - Production of flowable composition, e.g. paste, includes combining setting fluid, dry reactants, and water-soluble contrast agent in a ratio sufficient to produce the flowable material. The dry reactants comprise calcium source and phosphate source. The flowable composition sets into a calcium-phosphate-containing product.

DESCRIPTION - INDEPENDENT CLAIMS are also included for:

24/7/11 (Item 11 from file: 350) [Links](#)

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0014726904

WPI Acc no: 2005-074523/200508

Related WPI Acc No: 2002-034482; 2002-618849

XRAM Acc no: C2005-025538

**Production of flowable composition e.g. paste that sets into calcium phosphate-containing product for repairing hard tissue defects comprises combining silicate solution and dry reactants in predetermined ratio**

Patent Assignee: CONSTANTZ B R (CONS-I)

Inventor: **CONSTANTZ B R**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050009176	A1	20050113	US 2000561324	A	20000428	200508	B
			US 2002109994	A	20020329		
			US 2004817757	A	20040402		

Priority Applications (no., kind, date): US 2002109994 A 20020329; US 2000561324 A 20000428; US 2004817757 A 20040402

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20050009176	A1	EN	9	0	C-I-P of application	US 2000561324
					C-I-P of application	US 2002109994
					C-I-P of patent	US 6375935
					C-I-P of patent	US 6719993

#### Alerting Abstract US A1

**NOVELTY** - Producing a flowable composition that sets into a calcium phosphate-containing product comprises combining a silicate solution and dry reactants comprising a calcium source and a phosphate source. The silicate solution and dry reactants are combined in a ratio sufficient to produce a flowable material that sets into a calcium phosphate-containing product.

**USE** - For producing a flowable composition, e.g. paste, that sets into a calcium phosphate-containing product for repairing a hard tissue defect (claimed), e.g. bone defect.

**ADVANTAGE** - Calcium phosphate cement employing silicate liquid may be mixed very quickly and easily without specialized mixing devices and set rapidly. It obtains higher strength due to the lower liquids to solids ratio.

24/7/12 (Item 12 from file: 350) [Links](#)

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0014664741

WPI Acc no: 2005-012322/200501

XRAM Acc no: C2005-167556

XRPX Acc No: N2005-455902

**Flowable composition producing method for use in dental field, involves combining phosphate-silicate setting fluid and dry reactants, where setting fluid and dry reactants are combined in ratio to produce flowable material**

Patent Assignee: CONSTANTZ B R (CONS-I); DELANEY D (DELA-I); SKELETAL KINETICS LLC (SKEL-N)

Inventor: **CONSTANTZ B; CONSTANTZ B R; DELANEY D**

Patent Family ( 2 patents, 106 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20040250730	A1	20041216	US 2003462075	A	20030612	200501	B
WO 2004110316	A1	20041223	WO 2004US18500	A	20040610	200502	E

Priority Applications (no., kind, date): US 2003462075 A 20030612

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20040250730	A1	EN	11	0		
WO 2004110316	A1	EN				
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
Regional Designated States,Original	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					

**Alerting Abstract US A1**

**NOVELTY** - The method involves combining a phosphate-silicate setting fluid and dry reactants comprising a calcium source and a phosphate source. The setting fluid and dry reactants are combined in a ratio sufficient to produce a flowable material, where the ratio ranges from about 0.2:1 to 0.7:1. The setting fluid is a solution of a soluble silicate having a silicate concentration of 0.1 percent to 15 percent.

**DESCRIPTION** - INDEPENDENT CLAIMS are also included for the following:

24/7/13 (Item 13 from file: 350) [Links](#)

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0012765180

WPI Acc no: 2002-618849/200266

Related WPI Acc No: 2002-034482; 2005-074523

XRAM Acc no: C2002-174673

**Production of flowable composition for repairing hard tissue defects comprises combining silicate solution and dry reactants of calcium and phosphate sources to produce a product containing calcium phosphate**

Patent Assignee: CONSTANTZ B R (CONS-I); SKELETAL KINETICS LLC (SKEL-N)

Inventor: **CONSTANTZ B R**

Patent Family ( 2 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20020098245	A1	20020725	US 2000561324	A	20000428	200266	B
			US 2002109994	A	20020329		
US 6719993	B2	20040413	US 2002109994	A	20020329	200425	E

Priority Applications (no., kind, date): US 2000561324 A 20000428; US 2002109994 A 20020329

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20020098245	A1	EN	8	0	C-I-P of application	US 2000561324
					C-I-P of patent	US 6375935

**Alerting Abstract US A1**

NOVELTY - A silicate solution and dry reactants comprising calcium source and phosphate source, are combined in a preset ratio to produce a flowable material which sets into a calcium phosphate containing product.

DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

24/7/14 (Item 14 from file: 350) [Links](#)

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0011098724

WPI Acc no: 2002-034482/200204

Related WPI Acc No: 2002-618849; 2005-074523

XRAM Acc no: C2002-009680

XRFX Acc No: N2002-026539

**Production of flowable composition that sets calcium phosphate containing product involves combining silicate solution and dry reactants comprising calcium and phosphate source**

Patent Assignee: CONSTANTZ B (CONS-I); CONSTANTZ B R (CONS-I)

Inventor: **CONSTANTZ B R**

Patent Family ( 6 patents, 94 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2001082834	A1	20011108	WO 2001US13853	A	20010427	200204	B
AU 200159251	A	20011112	AU 200159251	A	20010427	200222	E
US 6375935	B1	20020423	US 2000561324	A	20000428	200232	E
EP 1284680	A1	20030226	EP 2001932749	A	20010427	200319	E
			WO 2001US13853	A	20010427		
JP 2003531798	W	20031028	JP 2001579712	A	20010427	200373	E
			WO 2001US13853	A	20010427		
AU 2001259251	B2	20050728	AU 2001259251	A	20010427	200553	E

Priority Applications (no., kind, date): US 2000561324 A 20000428

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
WO 2001082834	A1	EN	19	2		
National Designated States,Original	AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
Regional Designated States,Original	AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
AU 200159251	A	EN			Based on OPI patent	WO 2001082834
EP 1284680	A1	EN			PCT Application	WO 2001US13853
					Based on OPI patent	WO 2001082834
Regional Designated States,Original	AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
JP 2003531798	W	JA	23		PCT Application	WO 2001US13853

				Based on OPI patent	WO 2001082834
AU 2001259251	B2	EN		Previously issued patent	AU 2001259251
				Based on OPI patent	WO 2001082834

**Alerting Abstract WO A1**

**NOVELTY** - A flowable composition that sets calcium phosphate containing product is produced by combining a silicate solution and dry reactants comprising calcium and phosphate source in a ratio sufficient to produce flowable material.

**DESCRIPTION** - INDEPENDENT CLAIMS are also included for:

24/7/15 (Item 15 from file: 350) [Links](#)

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0009796843

WPI Acc no: 2000-085807/200007

Related WPI Acc No: 1989-372280; 1991-075259; 1991-287851; 1991-310054; 1993-044793; 1994-150827; 1994-255152; 1998-426881; 1998-567527; 2000-180968

XRAM Acc no: C2000-023962

XRPX Acc No: N2000-067268

**Repairing bone defects comprises application of a flowable composition containing phosphoric acid, calcium and neutralizing anions, useful e.g. for augmenting weak osteoporotic bone**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B R**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6005162	A	19991221	US 1988183770	A	19880420	200007	B
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		
			US 1994221646	A	19940401		
			US 1997790476	A	19970129		

Priority Applications (no., kind, date): US 1994221646 A 19940401; US 1992918233 A 19920723; US 1991722880 A 19910628; US 1991650462 A 19910204; US 1989393579 A 19890814; US 1988183770 A 19880420; US 1997790476 A 19970129

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 6005162	A	EN	7	0	C-I-P of application	US 1988183770
					Continuation of application	US 1989393579
					C-I-P of application	US 1991650462
					C-I-P of application	US 1991722880
					Division of application	US 1992918233
					Continuation of application	US 1994221646
					C-I-P of patent	US 4880610
					Continuation of patent	US 5129905
					Division of patent	US 5336264
					Continuation of patent	US 5820632



**Alerting Abstract US A**

**NOVELTY** - Repairing defective bone comprises by administering a flowable composition containing phosphoric acid, a calcium source and neutralizing anions to the bone and allowing it to set into a calcium phosphate mineral, is new.

**DESCRIPTION** - Repairing defective bone comprises:

24/7/16 (Item 16 from file: 350) [Links](#)

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0009648498

WPI Acc no: 1999-600789/199951

XRAM Acc no: C1999-174854

**Calcium phosphate cement containing antimicrobial agent**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B R**; **FULMER M**; **POSER R**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5968253	A	19991019	US 1998127996	A	19980731	199951	B

Priority Applications (no., kind, date): US 1998127996 A 19980731

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes
US 5968253	A	EN	10	3	

**Alerting Abstract US A**

NOVELTY - A calcium phosphate containing an antimicrobial agent cement is new.

DESCRIPTION - A calcium phosphate containing an antimicrobial agent cement comprises 60 to 95% of alpha-tricalcium phosphate, 1 to 20% of monocalcium phosphate monohydrate, 5 to 25% of calcium carbonate, lubricant to produce a flowable product and 0.01 to 10% of an antimicrobial agent. The components produce a flowable product which sets in less than 20 minutes into an apatitic product which has a compressive strength of at least 40 MPa.

INDEPENDENT CLAIMS are included for:

24/7/17 (Item 17 from file: 350) [Links](#)

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0009090901 *Drawing available*

WPI Acc no: 1999-009555/199901

XRPX Acc No: N1999-006900

**Re-bar implantable medical devices i.e. bone screws - has planar surface with protuberance having continuous cross-section whose radius of curvature varies from 1 to 10 mm**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B**; GROSSER M; PERING C

Patent Family ( 2 patents, 80 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1998051241	A1	19981119	WO 1998US9528	A	19980514	199901	B
AU 199873774	A	19981208	AU 199873774	A	19980514	199916	E

Priority Applications (no., kind, date): US 199746668 P 19970516

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
WO 1998051241	A1	EN	29	18		
National Designated States,Original	AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW					
Regional Designated States,Original	AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW					
AU 199873774	A	EN			Based on OPI patent	WO 1998051241

24/7/18 (Item 18 from file: 350) [Links](#)

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0009011299

WPI Acc no: 1998-567527/199848

Related WPI Acc No: 1989-372280; 1994-150827; 1998-426881; 2000-085807; 2000-180968; 1994-255152; 1993-044793; 1991-075259; 1991-287851; 1991-310054

XRAM Acc no: C1998-170436

XRPX Acc No: N1998-441527

**Kit for producing a rapid setting calcium phosphate mineral - comprising dry sources of calcium and phosphate and a solution of sodium phosphate or carbonate as lubricating medium**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B M; **CONSTANTZ B R**; FULMER M T

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5820632	A	19981013	US 1988183770	A	19880420	199848	B
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		
			US 1994221646	A	19940401		

Priority Applications (no., kind, date): US 1992918233 A 19920723; US 1991722880 A 19910628; US 1991650462 A 19910204; US 1989393579 A 19890814; US 1989358716 A 19890530; US 1988183770 A 19880420; US 1994221646 A 19940401

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 5820632	A	EN	7	0	Continuation of application	US 1988183770
					Continuation of application	US 1989358716
					Continuation of application	US 1989393579
					C-I-P of application	US 1991650462
					C-I-P of application	US 1991722880
					Division of application	US 1992918233
					Continuation of patent	US 4880610
					Continuation of patent	US 5047031
					Continuation of patent	US 5129905
					Division of patent	US 5336264

24/7/19 (Item 19 from file: 350) [Links](#)

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0008878765

WPI Acc no: 1998-426881/199836

Related WPI Acc No: 1989-372280; 1991-075259; 1991-287851; 1991-310054; 1993-044793; 1994-150827; 1994-255152; 1998-567527; 2000-085807; 2000-180968

XRAM Acc no: C1998-128554

**Calcium phosphate cement composition - comprising amorphous calcium phosphate, at least one additional calcium source and physiologically acceptable aqueous liquid**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B M; CONSTANTZ B R

Patent Family ( 2 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5782971	A	19980721	US 1991722880	A	19910628	199836	B
			US 1992963481	A	19921016		
			US 1997821021	A	19970319		
US 5782971	B1	19990921	US 1991722880	A	19910628	199945	E
			US 1992963481	A	19921016		
			US 1997821021	A	19970319		

Priority Applications (no., kind, date): US 1992963481 A 19921016; US 1991722880 A 19910628; US 1997821021 A 19970319

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 5782971	A	EN	7	0	C-I-P of application	US 1991722880
					C-I-P of application	US 1992963481
US 5782971	B1	EN			C-I-P of application	US 1991722880
					C-I-P of application	US 1992963481

#### Alerting Abstract US A

Calcium phosphate cement composition comprises an amorphous calcium phosphate having a calcium to phosphate molar ratio of about 1.6-1.8, at least one additional calcium source and a physiologically acceptable aqueous liquid.

USE - For treating bone fractures etc.

ADVANTAGE - The composition remodelable.

**Title Terms /Index Terms/Additional Words:** CALCIUM; PHOSPHATE; CEMENT; COMPOSITION; COMPRISE; AMORPHOUS; ONE; ADD; SOURCE; PHYSIOLOGICAL; ACCEPT; AQUEOUS; LIQUID

24/7/20 (Item 20 from file: 350) [Links](#)

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0008831453

WPI Acc no: 1998-377452/199832

XRAM Acc no: C1998-114639

XRFX Acc No: N1998-295103

**Preparation, storage and administration of calcium phosphate cements - using sterile storage means with integral mixing and dispensing means for dental and orthopaedic applications**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: CLAWSON B; **CONSTANTZ B R**; CONSTANTZ R

Patent Family ( 13 patents, 80 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1998028068	A1	19980702	WO 1997US23094	A	19971212	199832	B
AU 199860129	A	19980717	AU 199860129	A	19971212	199848	E
CN 1244815	A	20000216	CN 1997181454	A	19971212	200027	E
US 6083229	A	20000704	US 199632726	P	19961213	200036	E
			US 199746684	P	19970516		
			US 199755162	P	19970811		
			US 199755163	P	19970811		
			US 199764612	P	19971107		
			US 199765342	P	19971112		
			US 199765345	P	19971112		
			US 1997989845	A	19971212		
			US 1998183920	A	19981030		
EP 1024891	A1	20000809	EP 1997954786	A	19971212	200039	E
			WO 1997US23094	A	19971212		
US 6149655	A	20001121	US 199632726	P	19961213	200101	E
			US 199746684	P	19970516		
			US 199755162	P	19970811		
			US 199755163	P	19970811		
			US 199764612	P	19971107		
			US 199765342	P	19971112		
			US 199765345	P	19971112		
			US 1997989845	A	19971212		
MX 199905515	A1	19991001	MX 19995515	A	19990611	200103	E
KR 2000069469	A	20001125	WO 1997US23094	A	19971212	200130	E
			KR 1999705310	A	19990614		
JP 2001506540	W	20010522	WO 1997US23094	A	19971212	200134	E
			JP 1998528887	A	19971212		
EP 1024891	B1	20051026	EP 1997954786	A	19971212	200571	E

			WO 1997US23094	A	19971212		
DE 69734473	E	20051201	DE 69734473	A	19971212	200580	E
			EP 1997954786	A	19971212		
			WO 1997US23094	A	19971212		
ES 2252801	T3	20060516	EP 1997954786	A	19971212	200634	E
DE 69734473	T2	20060720	DE 69734473	A	19971212	200652	E
			EP 1997954786	A	19971212		
			WO 1997US23094	A	19971212		

Priority Applications (no., kind, date): US 1998183920 A 19981030; US 1997989845 A 19971212; WO 1997US23094 A 19971212; US 199765342 P 19971112; US 199764612 P 19971107; US 199755162 P 19970811; US 199755163 P 19970811; US 199746684 P 19970516; US 199632726 P 19961213; US 199765345 P 19971112

24/7/21 (Item 21 from file: 350) [Links](#)

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0007633034

WPI Acc no: 1996-251678/199625

XRAM Acc no: C1996-079648

**Reactive alpha tricalcium phosphate prepn. for use in calcium phosphate cements - by heating tricalcium phosphate to cause uniform transition to phase pure alpha tricalcium phosphate and rapidly cooling to below 700 deg.C**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B; BARR B M; BARR M; **CONSTANTZ B**; **CONSTANTZ B R**; CONSTANTZ R; FULMER M; ISON C; ISON I; ISON I C

Patent Family ( 24 patents, 67 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1996014265	A1	19960517	WO 1995US14151	A	19951031	199625	B
AU 199641407	A	19960531	WO 1995US14151	A	19951031	199639	E
			AU 199641407	A	19951031		
US 5569442	A	19961029	US 1994334519	A	19941104	199649	E
US 5571493	A	19961105	US 1994334519	A	19941104	199650	E
			US 1995468673	A	19950606		
EP 749400	A1	19961227	EP 1995939684	A	19951031	199705	E
			WO 1995US14151	A	19951031		
EP 749400	A4	19970102	EP 1995939149	A	19951103	199721	E
JP 9506588	W	19970630	WO 1995US14151	A	19951031	199736	E
			JP 1996515394	A	19951031		
US 5683667	A	19971104	US 1994334519	A	19941104	199750	E
			US 1995468673	A	19950606		
			US 1995570237	A	19951211		
KR 1997700139	A	19970108	WO 1995US14151	A	19951031	199801	E
			KR 1996703607	A	19960704		
NZ 296726	A	19971124	NZ 296726	A	19951031	199802	E
			WO 1995US14151	A	19951031		
US 5709742	A	19980120	US 1994334519	A	19941104	199810	E
			US 1996648318	A	19960515		
NZ 328544	A	19980226	NZ 328544	A	19951031	199813	E
AU 690393	B	19980423	AU 199641407	A	19951031	199828	E
JP 2788553	B2	19980820	WO 1995US14151	A	19951031	199838	E
			JP 1996515394	A	19951031		
JP 10330106	A	19981215	JP 1996515394	A	19951031	199909	E
			JP 1997360916	A	19951031		
US 5885540	A	19990323	US 1994334519	A	19941104	199919	E



			US 1995468673	A	19950606		
			US 1995570237	A	19951211		
			US 1997886239	A	19970701		
CN 1140442	A	19970115	CN 1995191527	A	19951031	200044	E
KR 436817	B	20040913	WO 1995US14151	A	19951031	200508	E
			KR 1996703607	A	19960704		
JP 2005350351	A	20051222	JP 1997360916	A	19951031	200603	E
			JP 2005241867	A	20050823		
EP 749400	B1	20060215	EP 1995939684	A	19951031	200614	E
			WO 1995US14151	A	19951031		
DE 69534789	E	20060420	DE 69534789	A	19951031	200628	E
			EP 1995939684	A	19951031		
			WO 1995US14151	A	19951031		
EP 1671927	A2	20060621	EP 1995939684	A	19951031	200643	E
			EP 20062228	A	19951031		
ES 2258769	T3	20060901	EP 1995939684	A	19951031	200659	E
DE 69534789	T2	20061102	DE 69534789	A	19951031	200678	E
			EP 1995939684	A	19951031		
			WO 1995US14151	A	19951031		

24/7/22 (Item 22 from file: 350) [Links](#)

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0007537518

WPI Acc no: 1996-151274/199615

XRAM Acc no: C1996-047482

**Apatite cement compsn. for repairing bone - comprises lubricant and dry component comprising basic calcium source particles coated with partially neutralised acidic calcium phosphate**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B M; CONSTANTZ B R; FULMER M T; ISON I C

Patent Family ( 8 patents, 63 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1996006041	A1	19960229	WO 1995US9811	A	19950803	199615	B
US 5496399	A	19960305	US 1994294325	A	19940823	199615	E
AU 199532108	A	19960314	AU 199532108	A	19950803	199625	E
US 5683496	A	19971104	US 1994294325	A	19940823	199750	E
			US 1995471408	A	19950606		
			US 1996645573	A	19960514		
US 5697981	A	19971216	US 1994294325	A	19940823	199805	E
			US 1995471408	A	19950606		
US 5846312	A	19981208	US 1994294325	A	19940823	199905	E
			US 1995471408	A	19950606		
			US 1996645573	A	19960514		
			US 1997886238	A	19970701		
US 5964932	A	19991012	US 1994294325	A	19940823	199949	E
			US 1995471408	A	19950606		
			US 1996645573	A	19960514		
			US 1997886238	A	19970701		
			US 1998111347	A	19980707		
US 6053970	A	20000425	US 1994294325	A	19940823	200027	E
			US 1995471408	A	19950606		
			US 1996645573	A	19960514		
			US 1997886238	A	19970701		
			US 1998111347	A	19980707		
			US 1999345984	A	19990630		

Priority Applications (no., kind, date): US 1999345984 A 19990630; US 1998111347 A 19980707; US 1997886238 A 19970701; US 1996645573 A 19960514; US 1995471408 A 19950606; US 1994294325 A 19940823

24/7/23 (Item 23 from file: 350) [Links](#)

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0007096154

WPI Acc no: 1995-123152/199516

XRAM Acc no: C1995-056139

**Prodn. of apatite prod. used in bone replacement compsns. - from storage stable partially neutralised acid**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B; FULMER M; ROSS J**

Patent Family ( 8 patents, 54 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1995003369	A1	19950202	WO 1994US7988	A	19940714	199516	B
AU 199473636	A	19950220	AU 199473636	A	19940714	199521	E
EP 710267	A1	19960508	EP 1994922575	A	19940714	199623	E
			WO 1994US7988	A	19940714		
EP 710267	A4	19960710	WO 1994US9427	A	19940818	199644	E
US 5580623	A	19961203	US 199396161	A	19930722	199703	E
			US 1995469898	A	19950606		
JP 9500604	W	19970121	WO 1994US7988	A	19940714	199713	E
			JP 1995505217	A	19940714		
JP 3773254	B2	20060510	WO 1994US7988	A	19940714	200635	E
			JP 1995505217	A	19940714		
JP 2006143584	A	20060608	JP 1995505217	A	19940714	200638	E
			JP 2005354983	A	20051208		

Priority Applications (no., kind, date): US 1995469898 A 19950606; US 199396161 A 19930722

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
WO 1995003369	A1	EN	19	0		
National Designated States,Original	AT AU BB BG BR BY CA CH CN CZ DE DK ES FI GB GE HU JP KE KG KP KR KZ LK LU LV MD MG MN MW NL NO NZ PL PT RO RU SD SE SI SK TJ TT UA UZ VN					
Regional Designated States,Original	AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE					
AU 199473636	A	EN			Based on OPI patent	WO 1995003369
EP 710267	A1	EN		0	PCT Application	WO 1994US7988
					Based on OPI patent	WO 1995003369
Regional Designated States,Original	AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE					

EP 710267	A4	EN				
US 5580623	A	EN	6	0	Continuation of application	US 199396161
JP 9500604	W	JA	20	0	PCT Application	WO 1994US7988
					Based on OPI patent	WO 1995003369
JP 3773254	B2	JA	10		PCT Application	WO 1994US7988
					Previously issued patent	JP 09500604
					Based on OPI patent	WO 1995003369
JP 2006143584	A	JA	11		Division of application	JP 1995505217

24/7/24 (Item 24 from file: 350) [Links](#)

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0006972680

WPI Acc no: 1994-150827/199418

Related WPI Acc No: 1989-372280; 1991-075259; 1991-287851; 1991-310054; 1993-044793; 1994-255152; 1998-426881; 1998-567527; 2000-085807; 2000-180968

XRAM Acc no: C1994-069283

XRPX Acc No: N1994-118447

**Biologically resorbable carbonated hydroxy-apatite compsn. - useful as support structures, fillers or prosthesis**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B R**; FULMER M; ISON I

Patent Family ( 11 patents; 15 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1994008458	A1	19940428	WO 1993US9086	A	19930924	199418	B
EP 622990	A1	19941109	EP 1993923726	A	19930924	199443	E
			WO 1993US9086	A	19930924		
EP 622990	A4	19950329	US 1997959246	A	19971028	199612	E
EP 835668	A1	19980415	EP 1993923726	A	19930924	199819	E
			EP 1997122455	A	19930924		
EP 622990	B1	19981223	EP 1993923726	A	19930924	199904	E
			WO 1993US9086	A	19930924		
			EP 1997122455	A	19930924		
DE 69322765	E	19990204	DE 69322765	A	19930924	199911	E
			EP 1993923726	A	19930924		
			WO 1993US9086	A	19930924		
US 5900254	A	19990504	US 1988183770	A	19880420	199925	E
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		
			US 1992963481	A	19921016		
			US 1996670514	A	19960627		
ES 2128442	T3	19990516	EP 1993923726	A	19930924	199926	E
US 5952010	A	19990914	US 1988183770	A	19880420	199944	E
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		

			US 1992963481	A	19921016		
			US 1997987430	A	19971209		
US 5962028	A	19991005	US 1988183770	A	19880420	199948	E
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		
			US 1992963481	A	19921016		
US 6334891	B1	20020101	US 1992963481	A	19921016	200207	E
			US 1999283487	A	19990401		

24/7/25 (Item 25 from file: 350) [Links](#)

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0006864905

WPI Acc no: 1994-255152/199431

Related WPI Acc No: 1989-372280; 1991-075259; 1991-287851; 1991-310054; 1993-044793; 1994-150827; 1998-426881; 1998-567527; 2000-085807; 2000-180968

XRAM Acc no: C1994-116633

XRPX Acc No: N1994-200954

**Enhancing setting times of calcium phosphate cement for bond repair, etc. - by incorporation of a phosphate or carbonate lubricant compsn.**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B M; **CONSTANTZ B R**; CONSTANZ B R; FULMER M T

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5336264	A	19940809	US 1988183770	A	19880420	199431	B
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1991650462	A	19910204		
			US 1991722880	A	19910628		
			US 1992918233	A	19920723		

Priority Applications (no., kind, date): US 1991722880 A 19910628; US 1991650462 A 19910204; US 1989393579 A 19890814; US 1989358716 A 19890530; US 1988183770 A 19880420; US 1992918233 A 19920723

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 5336264	A	EN	7	0	Continuation of application	US 1988183770
					Continuation of application	US 1989358716
					Continuation of application	US 1989393579
					C-I-P of application	US 1991650462
					C-I-P of application	US 1991722880
					Continuation of patent	US 4880610
					Continuation of patent	US 5047031
					Continuation of patent	US 5129905

24/7/26 (Item 26 from file: 350) [Links](#)

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0006602886

WPI Acc no: 1993-044793/199305

Related WPI Acc No: 1989-372280; 1991-287851; 1994-255152; 1994-150827; 2000-180968; 2000-085807; 1998-567527; 1998-426881; 1991-310054; 1991-075259

XRAM Acc no: C1993-020224

**Dry calcium phosphate mineral compsns. - prepd. by dry mixing calcium- and phosphate-sources, giving prod. which can be reacted with aq. lubricant to give cement material**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B; CONSTANTZ B R; MCVICKER K

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5178845	A	19930112	US 1988183770	A	19880420	199305	B
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1990558890	A	19900727		
			US 1991724859	A	19910702		

Priority Applications (no., kind, date): US 1990558890 A 19900727; US 1989393579 A 19890814; US 1989358716 A 19890530; US 1988183770 A 19880420; US 1991724859 A 19910702

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 5178845	A	EN	7	0	C-I-P of application	US 1988183770
					C-I-P of application	US 1989358716
					C-I-P of application	US 1989393579
					Continuation of application	US 1990558890
					C-I-P of patent	US 4880610
					Continuation of patent	US 5053212

**Alerting Abstract US A**

Ca phosphate mineral compsn. is prepd. by mechanically mixing at least 1 Ca source (I) and an acidic phosphate source (II) free of uncombined H<sub>2</sub>O for sufficient time for partial reaction of (I) and (II) to occur to provide a dry, incompletely-reacted prod. (III). The dry prod. (III) is capable of reacting with a lubricant (IV) to form a solid prod. with complete reaction of the reactants at below ca 60 deg C.

USE/ADVANTAGE - The dry prod. (III) requires less H<sub>2</sub>O for formation of a desired viscosity, has enhanced mechanical props., and is physiologically acceptable. The dry powder (III) is readily transported, and can be converted into a usable form by simple mixing with a lubricant (IV). The resulting prod. then provides good tensile



properties and sets rapidly to a hard material in a range of environments. The compsn. can be used as a flowable prod. to be introduced at various sites in the body, filling voids or areas totally deficient of hard bone. In addn., by adjusting the Ca:phosphate ratio in (III), the resorption rate of the final prod. (cement) can be tailored from e.g. 6 weeks to 18 months.

**Title Terms /Index Terms/Additional Words:** DRY; CALCIUM; PHOSPHATE; MINERAL; COMPOSITION; PREPARATION; MIX; SOURCE; PRODUCT; CAN; REACT; AQUEOUS; LUBRICATE; CEMENT; MATERIAL

24/7/27 (Item 27 from file: 350) [Links](#)

Derwent WPIX

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0006291808 *Drawing available*

WPI Acc no: 1993-085459/199310

Related WPI Acc No: 1991-297692

XRAM Acc no: C1993-037668

XRPX Acc No: N1993-065442

**Appts. for applying hydroxyapatite coating to prosthesis - has coating medium recirculated between coating trough and distribution tank with addn. of reactive components**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B**

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5188670	A	19930223	US 1990504941	A	19900405	199310	B
			US 1991686525	A	19910417		

Priority Applications (no., kind, date): US 1990504941 A 19900405; US 1991686525 A 19910417

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 5188670	A	EN	10	2	C-I-P of application	US 1990504941

#### Alerting Abstract US A

Appts. applies a strongly adhering, hydroxyapatite coating to a substrate. Appts. includes a coating trough, a distribution tank and a soln. prepn. tank. Coating medium is circulated continuously from the coating to the distribution trough and back again. Temp. and pH of the circulating medium are controlled. Soln. is transferred from the prepn. tank to the circulating medium. Ca, phosphate and neutralising base are added from individual sources. Ca and phosphate sources feed into the coating trough the Ca at a point proximal to the substrate while the phosphate and neutralising base sources are more distal. This allows small Ca phosphate particles to form proximal the substrate. Substrate is held in the trough and its position can be changed.

Substrates (14) supported by holders (16) are pref. placed in trough (12). Trough has Ca (18), phosphate (20) and hydroxide (22) inlet ports. This allows recirculating soln. to be replenished with Ca and phosphate and pH controlled downstream from the substrates.

24/7/28 (Item 28 from file: 350) [Links](#)

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0005697649

WPI Acc no: 1991-310054/199142

Related WPI Acc No: 1989-372280; 1991-075259; 1991-287851; 1993-044793; 1994-150827; 1994-255152; 1998-426881; 1998-567527; 2000-085807; 2000-180968

XRAM Acc no: C1991-134274

**Dry powder calcium phosphate compsn. for bone repairs - is stable and requires only liquid lubricant to provide setting paste**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: BARR B; CONSTANTZ B R; MCVICKER K

Patent Family ( 10 patents, 16 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5053212	A	19911001	US 1988183770	A	19880420	199142	B
			US 1989358716	A	19890530		
			US 1989393579	A	19890814		
			US 1990558890	A	19900727		
WO 1992002453	A	19920220	WO 1991US4783	A	19910705	199210	E
EP 541687	A1	19930519	EP 1991914704	A	19910705	199320	E
			WO 1991US4783	A	19910705		
JP 5509284	W	19931222	JP 1991514253	A	19910705	199405	E
			WO 1991US4783	A	19910705		
EP 541687	A4	19940223	DE 4135534	A	19911028	199529	E
EP 541687	B1	19970827	EP 1991914704	A	19910705	199739	E
			WO 1991US4783	A	19910705		
DE 69127447	E	19971002	DE 69127447	A	19910705	199745	E
			EP 1991914704	A	19910705		
			WO 1991US4783	A	19910705		
CA 2088169	C	20020423	CA 2088169	A	19910705	200231	E
			WO 1991US4783	A	19910705		
JP 2004224696	A	20040812	JP 1991514253	A	19910705	200453	E
			JP 2004108117	A	20040331		
JP 3748567	B2	20060222	JP 1991514253	A	19910705	200618	E
			WO 1991US4783	A	19910705		

24/7/29 (Item 29 from file: 350) [Links](#)

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0005685785 *Drawing available*

WPI Acc no: 1991-297692/199141

Related WPI Acc No: 1993-085459

XRAM Acc no: C1991-128700

XRPX Acc No: N1991-228095

**Uniform, high surface area hydroxyapatite coating on substrates - by contacting substrate at elevated temp. with a soln. contg. source of soluble calcium ion and source of soluble phosphate ion**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B R; OSAKA G C**

Patent Family ( 11 patents, 15 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
EP 450939	A	19911009	EP 1991302935	A	19910403	199141	B
CA 2039815	A	19911006				199201	E
JP 4224747	A	19920814	JP 199173170	A	19910405	199239	E
US 5164187	A	19921117	US 1990504941	A	19900405	199249	E
EP 450939	A3	19921216	EP 1991302935	A	19910403	199344	E
US 5279831	A	19940118	US 1990504941	A	19900405	199404	E
			US 1992933877	A	19920821		
EP 450939	B1	19970115	EP 1991302935	A	19910403	199708	E
DE 69124129	E	19970227	DE 69124129	A	19910403	199714	E
			EP 1991302935	A	19910403		
ES 2097791	T3	19970416	EP 1991302935	A	19910403	199722	E
JP 3340447	B2	20021105	JP 199173170	A	19910405	200275	E
CA 2039815	C	20030617	CA 2039815	A	19910404	200347	E

Priority Applications (no., kind, date): US 1992933877 A 19920821; US 1990504941 A 19900405

24/7/30 (Item 30 from file: 350) [Links](#)

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0004976809

WPI Acc no: 1989-372280/198951

Related WPI Acc No: 1994-150827; 1998-426881; 2000-085807; 1998-567527; 2000-180968; 1994-255152; 1993-044793; 1991-075259; 1991-287851; 1991-310054

XRAM Acc no: C1989-164834

XRPX Acc No: N1989-283371

**Prepn. of calcium phosphate minerals - from a mixt. of a phosphoric acid free of uncombined water, calcium source, base, and water to form settable paste**

Patent Assignee: NORIAN CORP (NORI-N)

Inventor: **CONSTANTZ B R**

Patent Family ( 7 patents, 15 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
EP 347028	A	19891220	EP 1989303806	A	19890418	198951	B
US 4880610	A	19891114	US 1988183770	A	19880420	199004	E
JP 2022113	A	19900125	JP 198998992	A	19890420	199010	E
CA 1332495	C	19941018	CA 597140	A	19890419	199442	E
EP 347028	B1	19980916	EP 1989303806	A	19890418	199841	E
DE 68928816	E	19981022	DE 68928816	A	19890418	199848	E
			EP 1989303806	A	19890418		
JP 2863544	B2	19990303	JP 198998992	A	19890420	199914	E

Priority Applications (no., kind, date): US 1988183770 A 19880420

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
EP 347028	A	EN	9	0		
Regional Designated States,Original	AT BE CH DE ES FR GB GR IT LI LU NL SE					
US 4880610	A	EN	11			
CA 1332495	C	EN				
EP 347028	B1	EN				
Regional Designated States,Original	DE FR GB					
DE 68928816	E	DE			Application	EP 1989303806
					Based on OPI patent	EP 347028
JP 2863544	B2	JA	8		Previously issued patent	JP 02022113